



Contents

No	
	COVER
	CONTENTS
	RECORD OF REVISIONS
1	GENERAL DESCRIPTION
2	ABSOLUTE MAXIMUM RATINGS
3	ELECTRICAL SPECIFICATIONS
3-1	ELECTRICAL CHARACTERISTICS
3-2	INTERFACE CONNECTIONS
3-3	SIGNAL TIMING SPECIFICATIONS
3-4	SIGNAL TIMING WAVEFORMS
3-5	COLOR INPUT DATA REFERNECE
3-6	POWER SEQUENCE
4	OPTICAL SPECIFICATIONS
5	MECHANICAL CHARACTERISTICS
6	RELIABILITY
7	INTERNATIONAL STANDARDS
8	PACKING
9	PRECAUTIONS



Record of Revision

Version	Date	No	Old Description	New Description	Remark
0	2008/11/15		First issue		
0.1	2008/12/08				Final Spec



1. General Description

This specification applies to the 31.5 inch Color TFT-LCD Module T315HW02 V1. This LCD module has a TFT active matrix type liquid crystal panel 1920x1080 pixels, and diagonal size of 31.5 inch. This module supports 1920x1080 HDTV mode (Non-interlace).

Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes. Gray scale or the brightness of the sub-pixel color is determined with a 10bit/8-bit gray scale signal for each dot.

The T315HW02 V1 has been designed to apply the 10bit/8-bit 2 channel LVDS interface method. It is intended to support displays where high brightness, wide viewing angle, high color saturation, and high color depth are very important.

The T315HW02 V1 model is RoHS verified which can be distinguished on panel label.

* General Information

Items	Specification	Unit	Note
Active Screen Size	31.51 inches		
Display Area	698.4 (H) x 392.85 (V)	mm	
Outline Dimension	760.0(H) x 450.0(V) x 45(D)	mm	With inverter
Driver Element	a-Si TFT active matrix		
Display Colors	16.7M	Colors	
Number of Pixels	1920x1080	Pixel	
Pixel Pitch	0.36375	mm	
Pixel Arrangement	RGB vertical stripe		
Display Mode	Normally Black		
Surface Treatment	AG, 3H		Haze = 11%



2. Absolute Maximum Ratings

The following are maximum values which, if exceeded, may cause permanent damage to the unit.

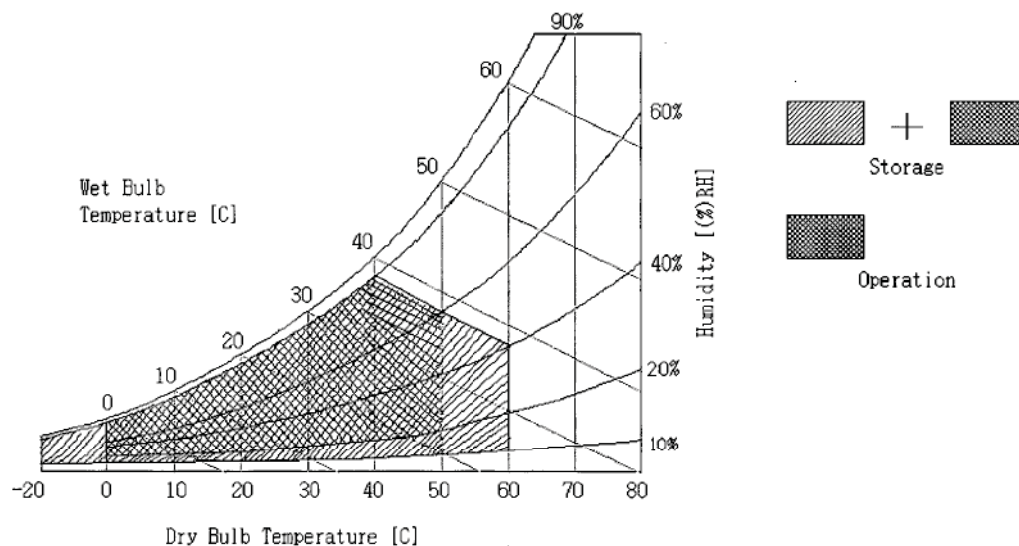
Item	Symbol	Min	Max	Unit	Conditions
Logic/LCD Drive Voltage	Vcc	-0.3	14	[Volt]	Note 1
Input Voltage of Signal	Vin	-0.3	3.6	[Volt]	Note 1
BLU Input Voltage	VDDb	-0.3	28	[Volt]	Note 1
BLU Brightness Control Voltage	Vdim	-0.3	7.0	[Volt]	Note 1
Operating Temperature	TOP	0	+50	[°C]	Note 2
Operating Humidity	HOP	10	90	[%RH]	Note 2
Storage Temperature	TST	-20	+60	[°C]	Note 2
Storage Humidity	HST	10	90	[%RH]	Note 2
Panel Surface Temperature	PST		65	[°C]	Note 3

Note 1: Duration:50 msec.

Note 2 : Maximum Wet-Bulb should be 39°C and No condensation.

The relative humidity must not exceed 90% non-condensing at temperatures of 40°C or less. At temperatures greater than 40°C, the wet bulb temperature must not exceed 39°C.

Note 3: Surface temperature is measured at 50°C Dry condition



©Copyright AU Optronics, Inc.
January, 2003 All Rights Reserved.
6/31

No Reproduction and Redistribution Allowed

T315HW02 V1 - Spec. Ver 0.1



3. Electrical Specification

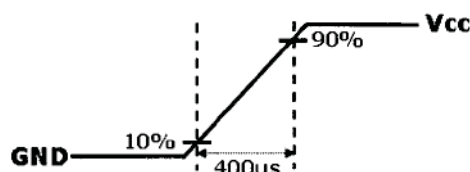
The T315HW02 V1 requires two power inputs. One is employed to power the LCD electronics and to drive the TFT array and liquid crystal. The second input power for the BLU, is to power inverter..

3-1 Electrical Characteristics

Parameter		Values				Unit	Notes
			Min	Typ	Max		
CD:							
Power Supply Input Voltage		Vcc	10.8	12	13.2	Vdc	1
Power Supply Input Current		Icc		1.3		A	2
Power Consumption		Pc		15.5		Watt	2
Inrush Current		I _{RUSH}			3	Apeak	3
LVDS Interface	Differential Input High Threshold Voltage	VTH			+100	mV	4
	Differential Input Low Threshold Voltage	VTL	-100			mV	4
	Common Input Voltage	VCIM	1.13	1.20	1.38	mV	4
CMOS Interface	Input High Threshold Voltage	VIH (High)	2	--	--	Vdc	
	Input Low Threshold Voltage	VIL (Low)	--	--	0.8	Vdc	
Backlight Power Consumption		PDDb	63.5	67	70.5	Watt	
Life Time			50,000			Hours	6

Note :

1. The ripple voltage should be controlled under 10% of V_{CC}
2. V_{CC}=12.0V, $f_v = 60\text{Hz}$, $f_{\text{CLK}}=81.5\text{Mhz}$, 25°C, Test Pattern : White Pattern
3. Measurement condition :



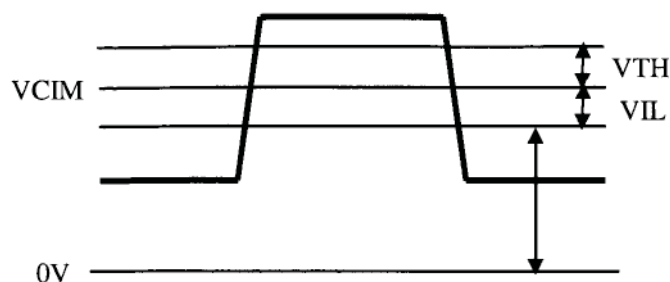
©Copyright AU Optonics, Inc.
January, 2003 All Rights Reserved.
7/31

No Reproduction and Redistribution Allowed

T315HW02 V1 - Spec. Ver 0.1



4. $V_{CIM} = 1.2V$



5. The performance of the Lamp in LCD panel, for example life time or brightness, is extremely influenced by the characteristics of the DC-AC Inverter. So all the parameters of an inverter should be carefully designed as not to produce too much leakage current from high-voltage output of the inverter. When you design or order the inverter, please make sure unwanted lighting caused by the mismatch of the lamp and the inverter (no lighting, flicker, etc) never occurs. After confirmation, the LCD panel should be operated in the same condition as installed in your instrument.
6. Do not attach a conducting tape to lamp connecting wire. If the lamp wire attach to conducting tape, TFT-LCD Module have a low luminance and the inverter has abnormal action because leakage current occurs between lamp wire and conducting tape.
7. The relative humidity must not exceed 80% non-condensing at temperatures of $40^{\circ}C$ or less. At temperatures greater than $40^{\circ}C$, the wet bulb temperature must not exceed $39^{\circ}C$. When operate at low temperatures, the brightness of CCFL will drop and the life time of CCFL will be reduced.



3-2 Interface Connections

- Connector on Panel: JAE FI-RE51S-HF (Manufactured by JAE)

Pin	Symbol	I/O	Remark
1	VDD (12V)	I	Power
2	VDD (12V)	I	Power
3	VDD (12V)	I	Power
4	VDD (12V)	I	Power
5	VDD (12V)	I	Power
6	NC		No connection
7	GND	I	GND
8	GND	I	GND
9	GND	I	GND
10	RAX0-	I	LVDS RAN
11	RAX0+	I	LVDS RAP
12	RAX1-	I	LVDS RBN
13	RAX1+	I	LVDS RBP
14	RAX2-	I	LVDS RCN
15	RAX2+	I	LVDS RCP
16	GND	I	GND
17	RAXCLK-	I	LVDS RCLKN
18	RAXCLK+	I	LVDS RCLKP
19	GND	I	GND
20	RAX3-	I	LVDS RDN
21	RAX3+	I	LVDS RDP
22	RAX4-	I	LVDS REN
23	RAX4+	I	LVDS REP
24	GND	I	GND
25	RBX0-	I	LVDS RAN
26	RBX0+	I	LVDS RAP
27	RBX1-	I	LVDS RBN
28	RBX1+	I	LVDS RBP
29	RBX2-	I	LVDS RCN
30	RBX2+	I	LVDS RCP
31	GND	I	GND
32	RBXCLK-	I	LVDS RCLKN

©Copyright AU Optronics, Inc.

January, 2003 All Rights Reserved.

9/31

No Reproduction and Redistribution Allowed

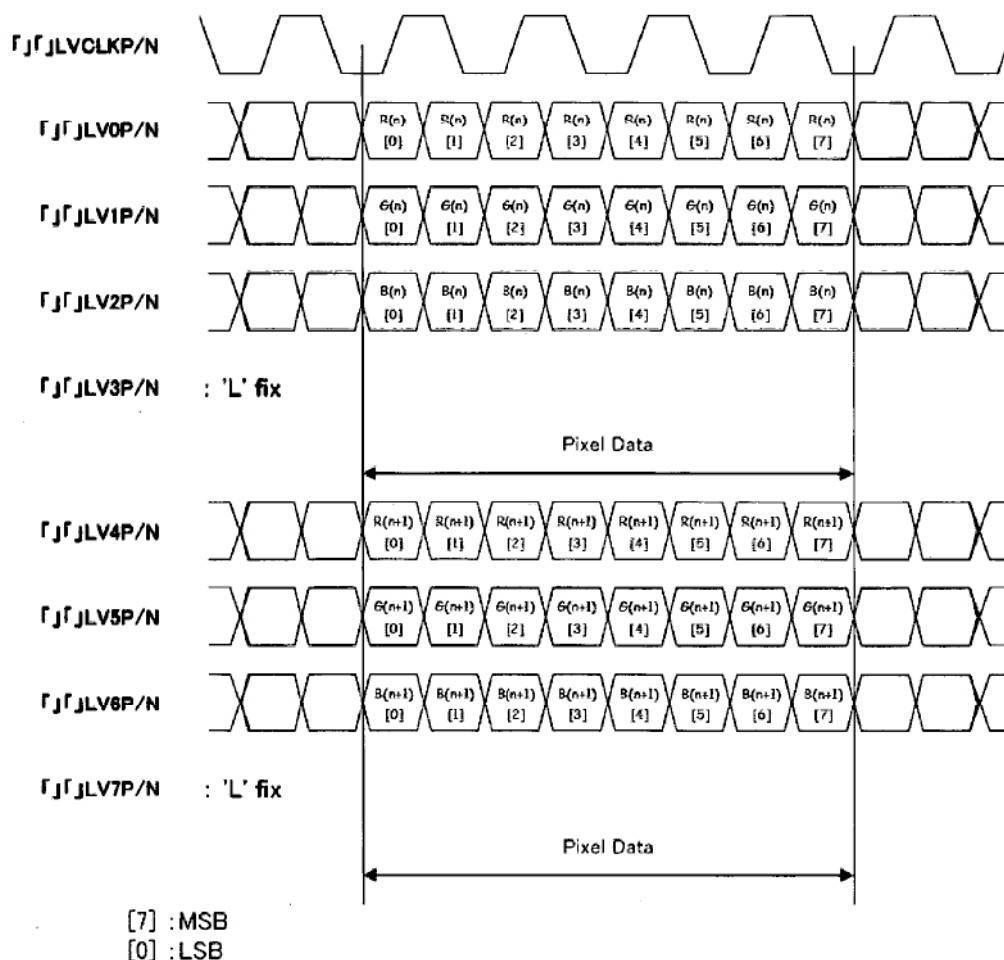
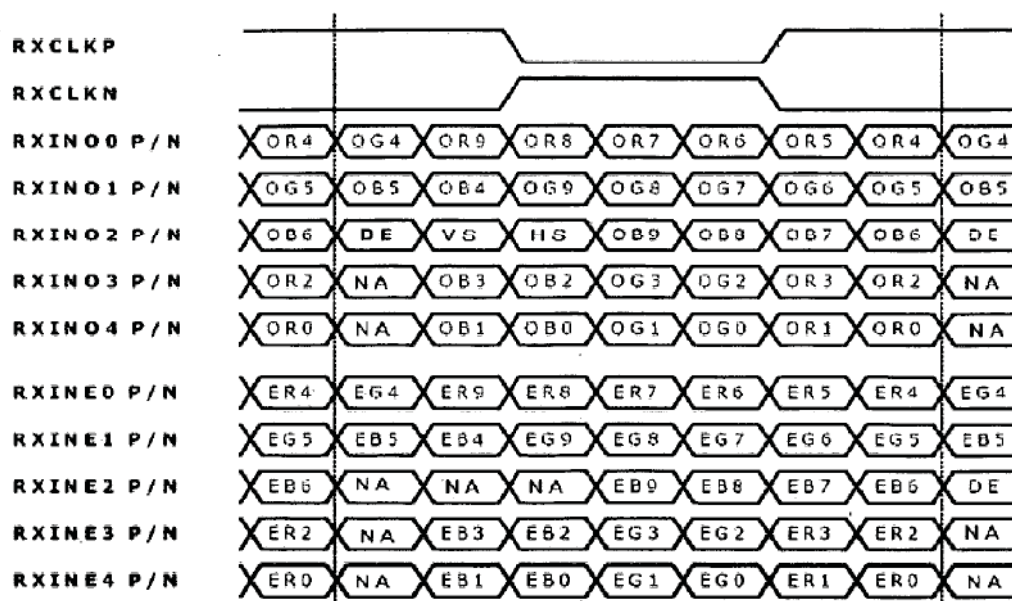
T315HW02 V1 - Spec. Ver 0.1



33	RBXCLK+	I	LVDS RCLKP
34	GND	I	GND
35	RBX3-	I	LVDS RDN
36	RBX3+	I	LVDS RDP
37	RBX4-	I	LVDS REN
38	RBX4+	I	LVDS REP
39	GND	I	GND
40	TCON_SCL	I	I2C clock
41	TCON_SDA	I/O	I2C data
42	NC		No connection
43	BUS_SW	I	I2C bus enable (H/Open:enable, L:disable)
44	T_BINT1	I	I2C bus enable (H/Open:enable, L:disable)
45	SET-ON2	I	Power on sequence
46	SA-MODE	I	Standalone mode (H/Open:Standalone mode, L:Standard mode)
47	PANEL-ON	I	Power on sequence
48	RESET	I	Reset (H:Reset On, L/Open:Release)
49	NC		No connection
50	TCONRDY	O	TCON ready signal (H:OK, L:NG)
51	VCA	I	Vcom Adjustment mode (H:Normal mode, L:VCA mode)



LVDS / Mini-LVDS mapping





3-3 Signal Timing Specifications

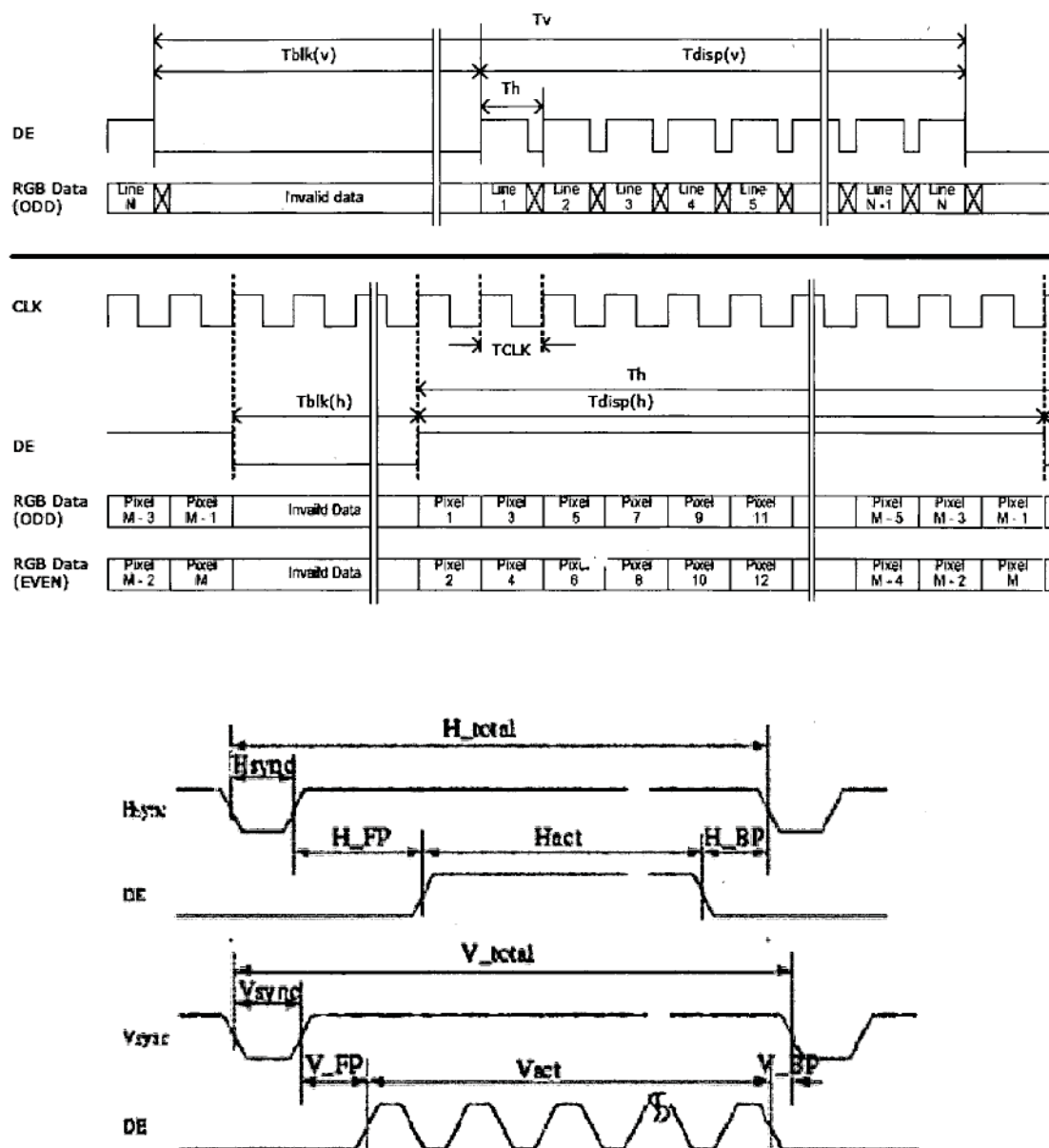
This is the signal timing required at the input of the User connector. All of the interface signal timing should be satisfied with the following specifications for it's proper operation.

* Timing Table

Symbol	Unit	AUO TEST (SA MODE)			Remark
PCLK	[MHz]	73(min)	74.47(typ.)	75(max)	
Hfreq	[kHz]	67.455			
Vfreq	[Hz]	59.96			
Htotal	[CLK]	2208			
Hact	[CLK]	1920			
H_FP	[CLK]	48			
H_BP	[CLK]	208			
Hsync	[CLK]	32			
Vtotal	[Line]	1125			
Vact	[Line]	1080			
V_FP	[Line]	19			
V_BP	[Line]	22			
Vsync	[Line]	4			



3-4 Signal Timing Waveforms





3-5 Color Input Data Reference

The brightness of each primary color (red, green and blue) is based on the 8 bit gray scale data input for the color; the higher the binary input, the brighter the color. The table below provides a reference for color versus data input.

COLOR DATA REFERENCE

color		Input Color data																							
		Red								Green								Blue							
		R0	R1	R2	R3	R4	R5	R6	R7	G0	G1	G2	G3	G4	G5	G6	G7	B0	B1	B2	B3	B4	B5	B6	B7
Basic color	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green (255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Blue (255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Red	000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	001	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	254	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	255	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Green	000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	001	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	254	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	255	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Blue	000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	254	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

©Copyright AU Optonics, Inc.

January, 2003 All Rights Reserved.

14/31

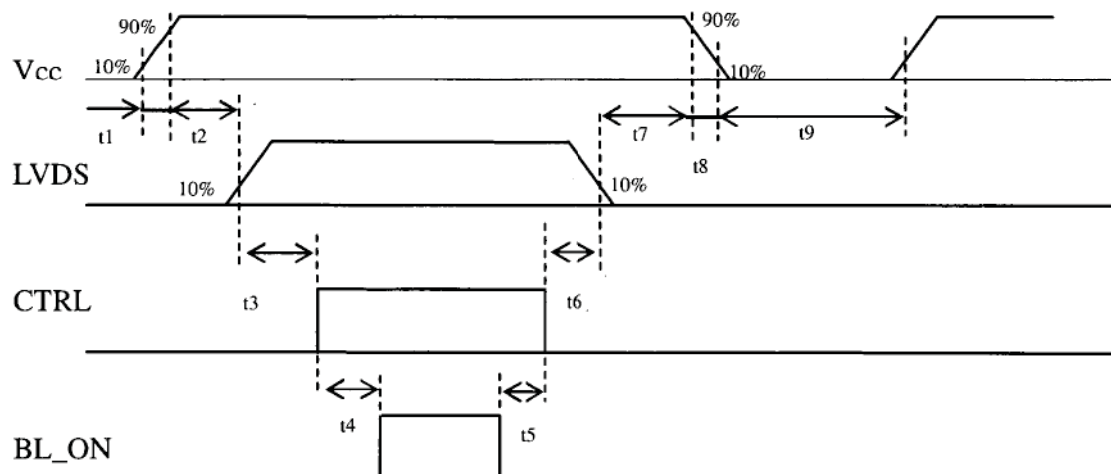
No Reproduction and Redistribution Allowed

T315HW02 V1 - Spec. Ver 0.1



3-6 Power Sequence for LCD Module

3.6.1 Power Sequence for LCD



CTRL : T-BINT, SA_MODE, BUS_SW, PANEL_ON_RESET

Parameter	Values			Units
	Min.	Typ.	Max.	
t1	0.47	-	5	mS
t2	110	-	150	mS
t3	10	-	20	mS
t4	500	-	-	mS
t5	200	-	-	mS
t6	0	-	-	mS
t7	0	-	50	mS
t8	0.47	-	300	mS
t9	1000	-	-	mS



3-7 Backlight Power Specification for LCD Module

3.7.1 Electrical specification

Item	Symb.	Condition	Spec			Unit	Note
			Min	Typ	Max		
Input Voltage	VDDB	---	21.6	24.0	26.4	VDC	
Input Current (Turn on condition)	IDDB	VDDB=24V	2.78	2.93	3.10	ADC	1
Input Power (Turn on condition)	PDDB	VDDB=24V	--	70.3	74.4	W	1
Input Current (Stable condition)	IDDB	VDDB=24V		2.79		ADC	1
Input Power (Stable condition)	PDDB	VDDB=24V		67.0		W	1
Inrush Current	IRUSH	VDDB=24V	---	---	6.0	ADC	1,2
On/Off Control Voltage	VBLON	ON	VDDB=24V	2.0	---	5.0	VDC
		OFF	VDDB=24V	0.0	---	0.8	
On/Off Control Current	IBLON	VDDB=24V	0.0	---	1.5	mADC	
Dimming Control Voltage	VDIM	MAX	VDDB=24V	---	3.3	---	VDC
		MIN	VDDB=24V	---	0.0	---	
Dimming Control Current	I_DIM	MIN	VDDB=24V	---	---	1.5	mADC
Internal Dimming Ratio	DIM_R	---	10		100	%	
PWM Function	V_PWM	MAX	---	2.0	---	5.0	VDC
		MIN	---	0.0	---	0.8	
External PWM Control Current	I_EPWM	---	---	---	1.5	mADC	
External PWM Ratio (Brightness)	D_EPWM	---	10	---	100	%	3
External PWM Frequency	F_EPWM	---	120	180	240	Hz	

Note1 : VDIM= 3.3V (MAX)

(Ta=25±5°C, Turn on for 45minutes)

Note 2 : Measurement condition Rising time = 20 ms (VDDB : 10%~90%);

Note 3 : (a) Uniformity and flicker does not guarantee below 20% dimming control

(b) 10% dimming control is function okay and no backlight shut down

Input Pin Assignment

CN1: CI0114M1HRL-LF (Civilux)

Pin No	Symbol	Description	Default
Pin No	Symbol	Description	24V
1	VDDB(main power)	DC input 24V VDC	24V
2	VDDB(main power)	DC input 24V VDC	24V
3	VDDB(main power)	DC input 24V VDC	24V
4	VDDB(main power)	DC input 24V VDC	24V
5	VDDB(main power)	DC input 24V VDC	24V
6	GND	Ground	GND
7	GND	Ground	GND
8	GND	Ground	GND
9	GND	Ground	GND
10	GND	Ground	GND
11	Panel DET	Panel status detect Inverter OK: Low/GND (0-0.8V) Inverter NG: open collector	-
12	VBLON	BL on-off : high/open(3.3 ~ 5V) for BL on, low(GND) for BL off	-
13	VDIM (LCD Bright)	VDIM: Internal PWM Dimming control signal input (DC 0~3.3V) (3.3V : Maximum brightness, 0V min brightness) < NC : when External PWM >	-
14	PDIM (LCD Bright)	PDIM: External PWM Dimming control signal input (AC 0~3.3V, Duty: 20%~100%) < NC : when internal PWM >	-

©Copyright AU Optonics, Inc.

January, 2003 All Rights Reserved.

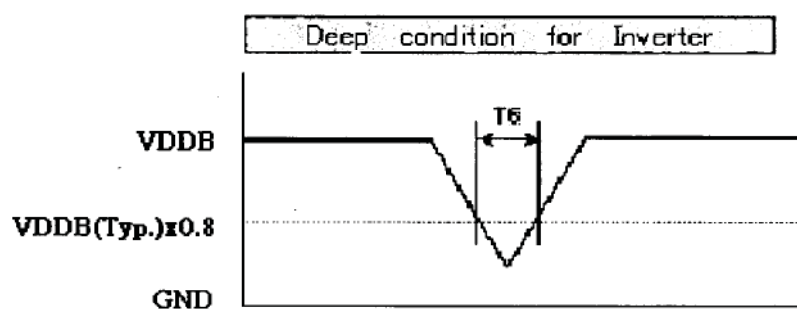
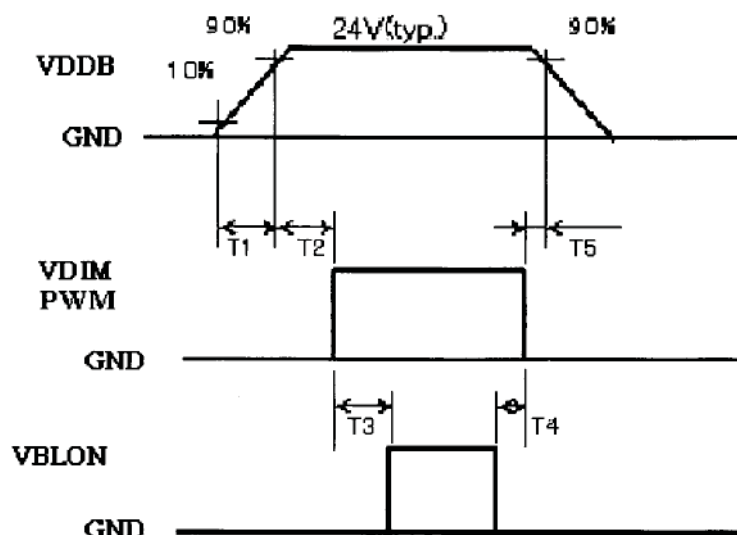
16/31

No Reproduction and Redistribution Allowed

T315HW02 V1 - Spec. Ver 0.1



3.7.2 Power Sequence for Inverter



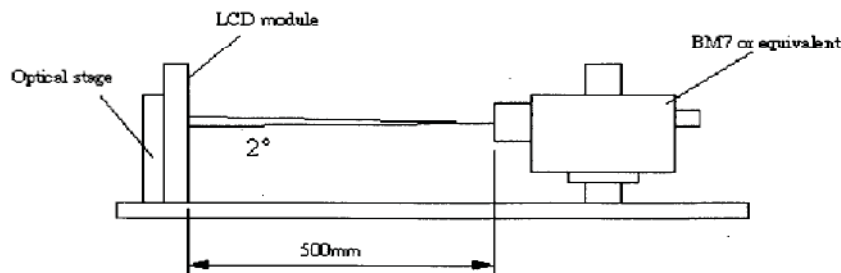
Parameter	Values			Units
	Min.	Typ.	Max.	
T1	20	-	-	Ms
T2	50	-	-	Ms
T3	0	-	-	Ms
T4	0	-	-	Ms
T5	0	-	-	Ms
T6	-	-	10	Ms



4 Optical Specification

Optical characteristics are determined after the unit has been 'ON' and stable for approximately 45 minutes in a dark environment at 25°C. The values specified are at an approximate distance 50cm from the LCD surface at a viewing angle of Φ and θ equal to 0°.

Fig.1 1 presents additional information concerning the measurement equipment and method.



Parameter		Symbol	Values			Units	Notes
			Min.	Typ.	Max.		
Contrast Ratio		CR	3200	4000			1
Surface Luminance, white		LWH	400	500		cd/m ²	2
Luminance Variation		δ_{WHITE}	9 p		1.30		3
Response time	G to G	T_{γ}		6.5		ms	4
Color Gamut		NTSC		72		%	
Color Coordinates							
	RED	R_X	Typ. -0.03	0.64	Typ. +0.03		
		R_Y		0.33			
	GREEN	G_X		0.29			
		G_Y		0.60			
	BLUE	B_X		0.15			
		B_Y		0.06			
	WHITE	W_X		0.275			
		W_Y		0.285			
Viewing Angle							
	x axis, right($\varphi=0^\circ$)	θ_r		89		degree	5
	x axis, left($\varphi=180^\circ$)	θ_l		89			
	y axis, up($\varphi=90^\circ$)	θ_u		89			
	y axis, down ($\varphi=0^\circ$)	θ_d		89			



Note:

1. Contrast Ratio (CR) is defined mathematically as:

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance of } L_{\text{on5}}}{\text{Surface Luminance of } L_{\text{off5}}}$$

Surface luminance is luminance value at point 5 across the LCD surface 50cm from the surface with all pixels displaying white. From more information see FIG 2. When $V_{\text{DDB}} = 24\text{V}$, $I_{\text{DDB}} = 2.8\text{A}$, $L_{\text{WH}} = L_{\text{on5}}$, where L_{on5} is the luminance with all pixels displaying white at center 5 location..

2. The variation in surface luminance, δ_{WHITE} is defined (center of Screen) as:

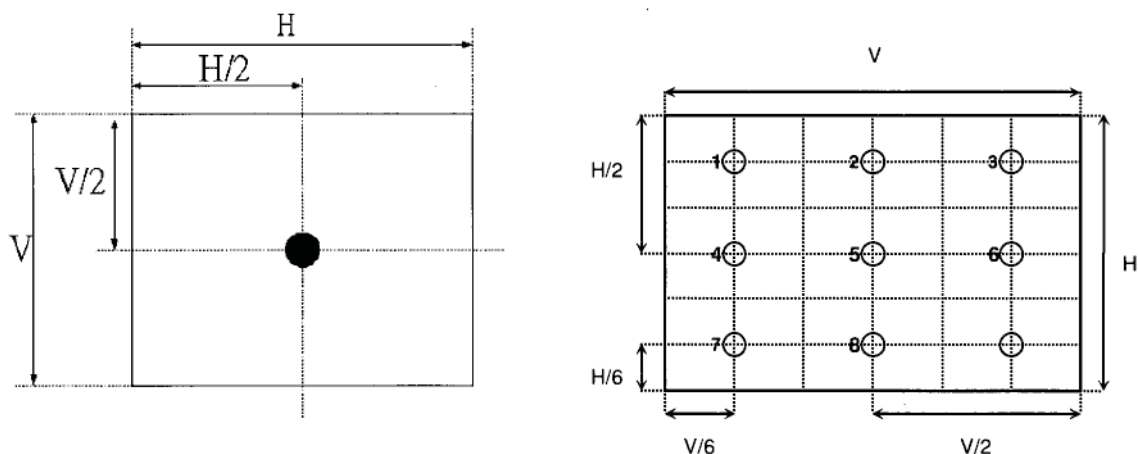
$$\delta_{\text{WHITE(9P)}} = \text{Maximum}(L_{\text{on1}}, L_{\text{on2}}, \dots, L_{\text{on9}}) / \text{Minimum}(L_{\text{on1}}, L_{\text{on2}}, \dots, L_{\text{on9}})$$

3. Response time T_y is the average time required for display transition by switching the input signal for five luminance ratio (0%,25%,50%,75%,100% brightness matrix) and is based on $f_v = 60\text{Hz}$ to optimize.

	0%	25%	50%	75%	100%
0%		t0%-25%	t0%-50%	t0%-75%	t0%-100%
25%	t25%-0%		t25%-50%	t25%-75%	t25%-100%
50%	t50%-0%	t50%-25%		t50%-75%	t50%-100%
75%	t75%-0%	t75%-25%	t75%-50%		t75%-100%
100%	t100%-0%	t100%-25%	t100%-50%	t100%-75%	

4. Viewing angle is the angle at which the contrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG4.

FIG. 2 Luminance



©Copyright AU Optonics, Inc.
January, 2003 All Rights Reserved.
19/31

No Reproduction and Redistribution Allowed

T315HW02 V1 - Spec. Ver 0.1



FIG.3 Response Time

The response time is defined as the following figure and shall be measured by switching the input signal for “any level of gray(bright)” and “any level of gray(dark)”.

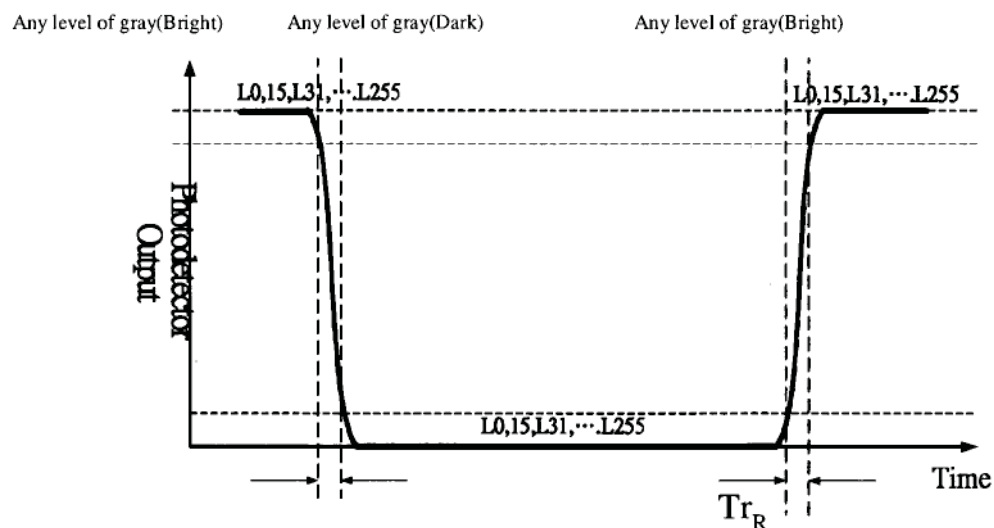
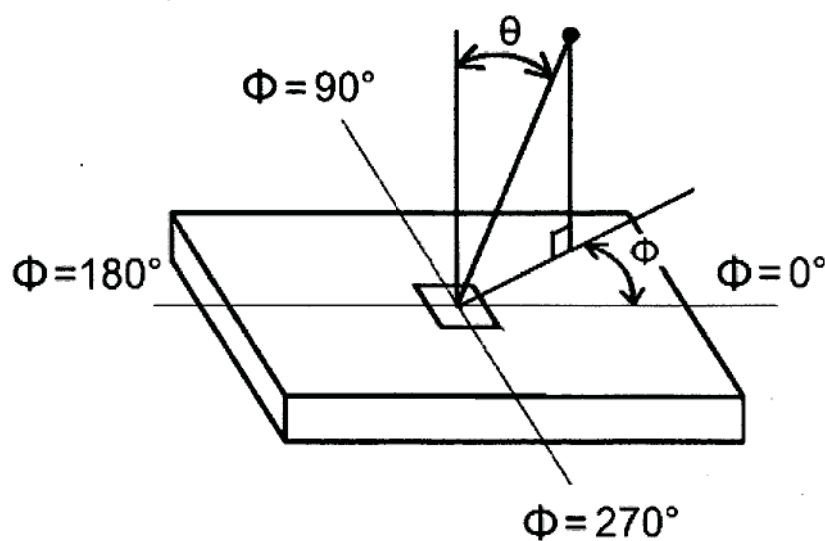


FIG.4 Viewing angle





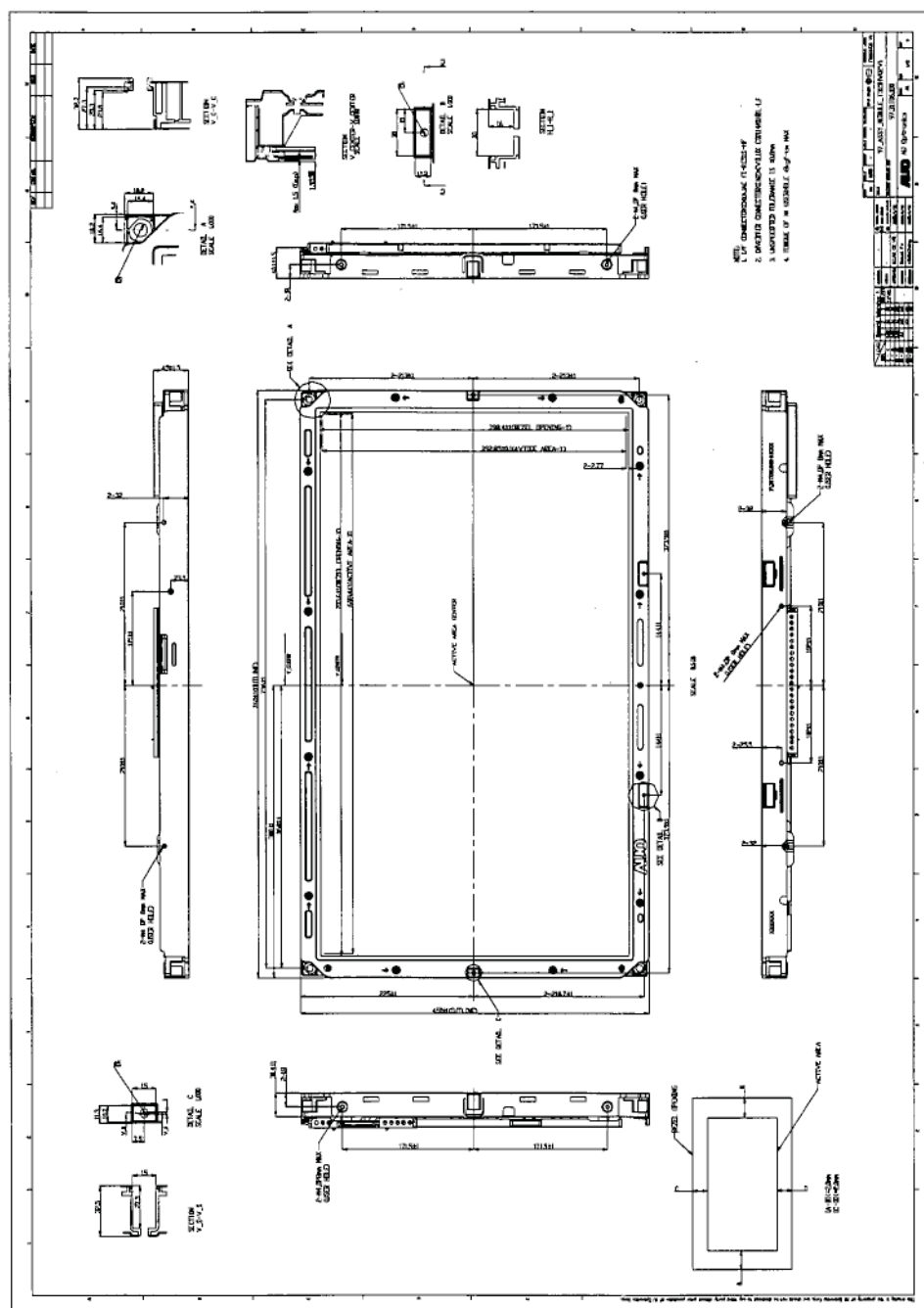
5. Mechanical Characteristics

The contents provide general mechanical characteristics for the model T315HW02 V1. In addition the figures in the next page are detailed mechanical drawing of the LCD.

Outline Dimension	Horizontal	760.0mm
	Vertical	450.0mm
	Depth	45mm
Bezel Opening	Horizontal	703.6mm
	Vertical	398.4mm
Active Display Area	Horizontal	698.4mm
	Vertical	392.85mm
Weight	6500g Typ.	
Surface Treatment	AG, 3H, Haze=11%	

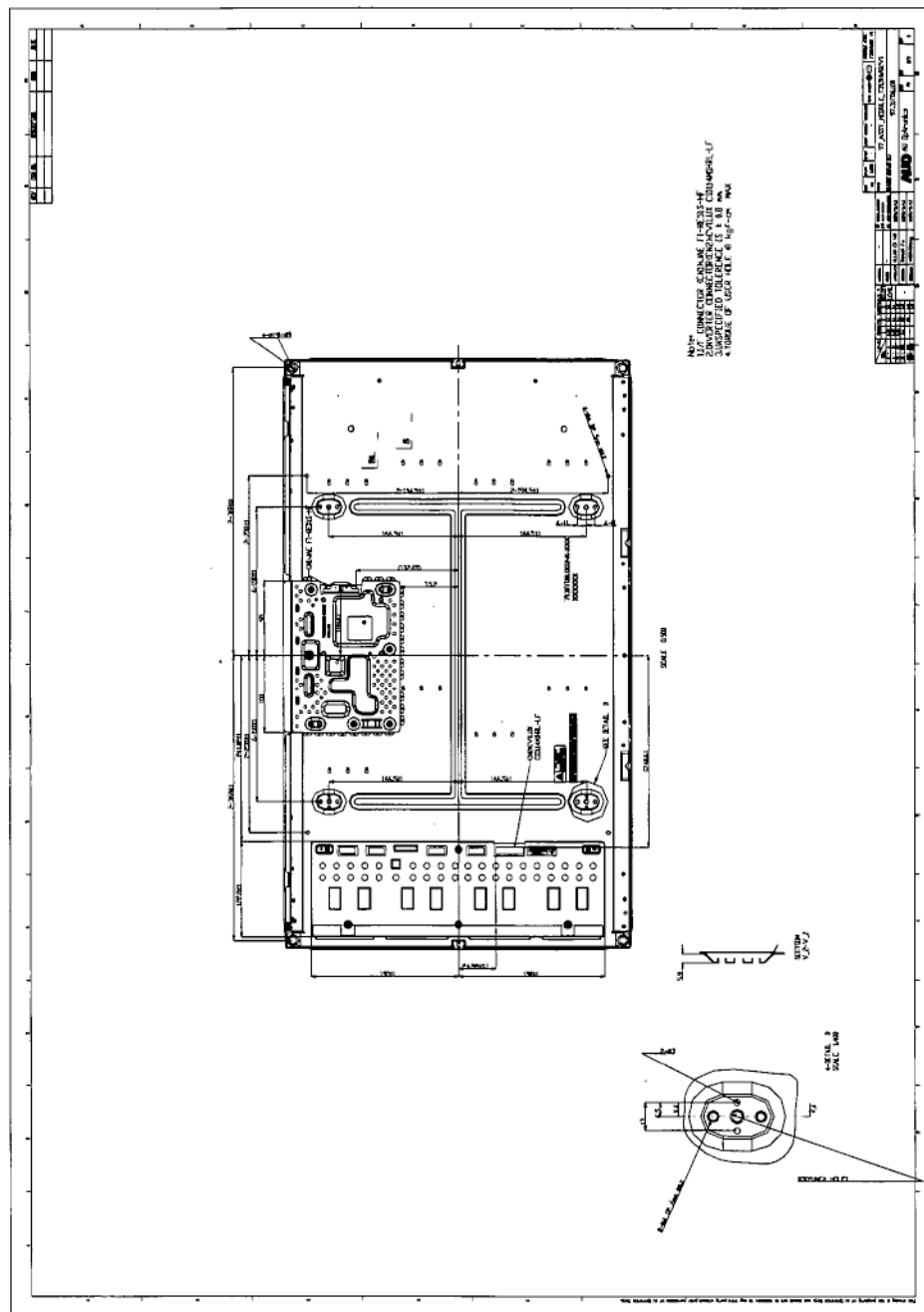
AUO

Front:



©Copyright AU Optonics, Inc.
January, 2003 All Rights Reserved.
22/31
No Reproduction and Redistribution Allowed

T315HW02 V1 - Spec. Ver 0.1

**AUO****Back:**

©Copyright AU Optonics, Inc.
January, 2003 All Rights Reserved.
23/31
No Reproduction and Redistribution Allowed

T315HW02 V1 - Spec. Ver 0.1



6. Reliability

Environment test condition

No	Test Item	Condition
1	High temperature storage test	Ta=60°C 300h
2	Low temperature storage test	Ta=-20°C 300h
3	High temperature operation test	Ta=50°C 300h
4	Low temperature operation test	Ta=-5°C 300h
5	Vibration test (non-operating)	"(10 ~ 300Hz/1.5G/11min SR, XYZ 30min/axis) Vibration level : 1.5G RMS, Bandwidth : 10-300Hz Duration: X, Y, Z 30min. "
6	Shock test (non-operating)	Shock level: 50G Waveform: half sine wave, 11ms Direction: $\pm X$, $\pm Y$, $\pm Z$, one time each direction
7	Vibration test (with carton)	Random wave (1.5 Grms 10~200Hz) 30mins / Per each X.Y.Z axes "
8	Drop test (with carton)	Height: 38cm 1 corner, 3 edges, 6 surfaces (ASTMD4169-I)



7. International Standard

7-1. Safety

- i. UL1950 Third Edition, Underwriters Laboratories, Inc. Jan. 28, 1995

Standard for Safety of Information Technology Equipment Including electrical Business Equipment.

- ii. CAN/CSA C22.2 No. 950-95/60950 Third Edition, Canadian Standards Association,

Standard for Safety of Information Technology Equipment Including Electrical Business Equipment.

- iii. EN60950 : 1992+A2: 1993+A2: 1993+C3: 1995+A4: 1997+A11: 1997

IEC 950: 1991+A1: 1992+A2: 1993+C3: 1995+A4:1996

European Committee for Electrotechnical Standardization (CENELEC)

EUROPEAN STANDARD for Safety of Information Technology Equipment Including Electrical Business Equipment.

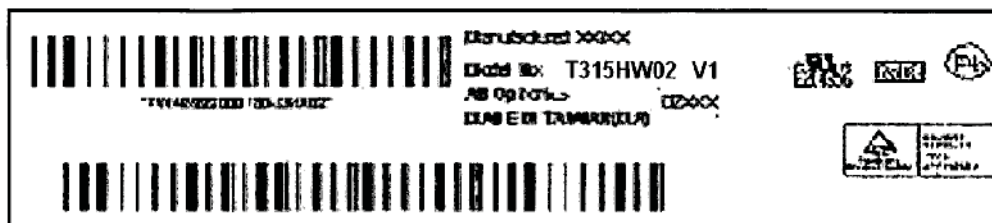
7-2. EMC

- a) ANSI C63.4 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electrical Equipment in the Range of 9kHz to 40GHz. "American National standards Institute(ANSI), 1992
- b) C.I.S.P.R "Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment." International Special committee on Radio Interference.
- c) EN 55022 "Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment." European Committee for Electrotechnical Standardization. (CENELEC), 1998



8. Packing

Panel label:



TW7A00400044-ZM0200

TW7A004: T: Taiwan, A/B: China

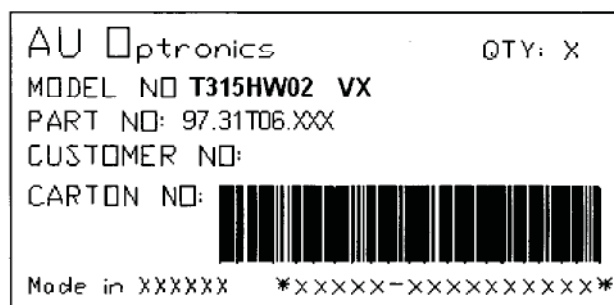
00044: Panel Serial Number

ZM0: AUO internal code

Manufactured 07/43: 2007 week 43

Made In Taiwan: Taiwan made

Carton Label:



©Copyright AU Optronics, Inc.

January, 2003 All Rights Reserved.

26/31

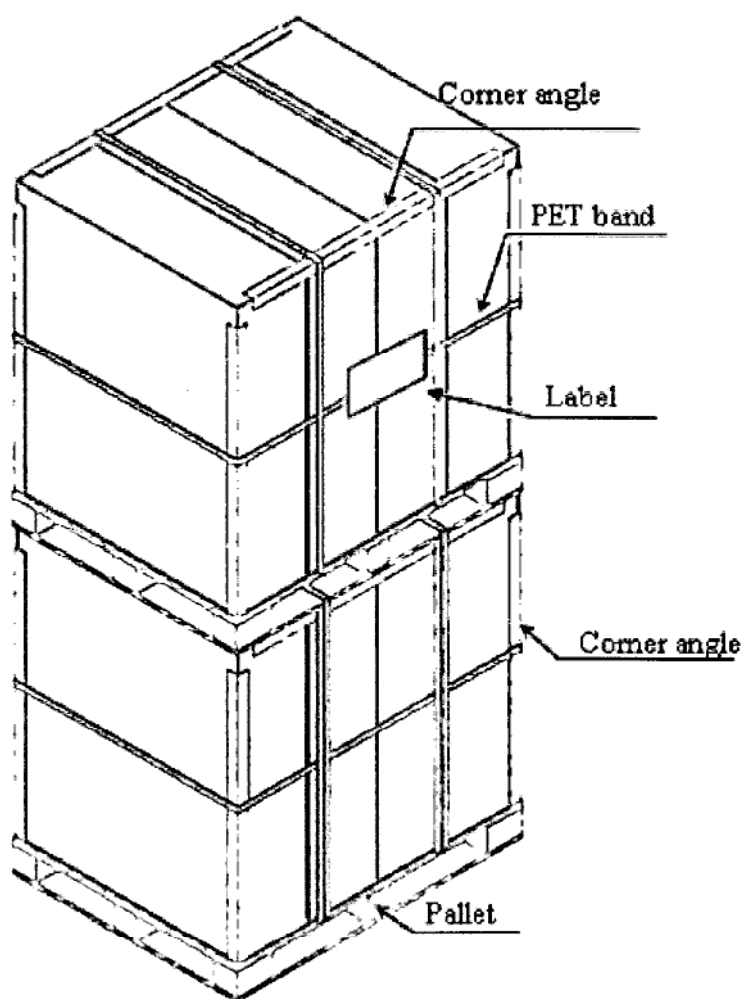
No Reproduction and Redistribution Allowed

T315HW02 V1 - Spec. Ver 0.0

One step solution for LCD / PDP / OLED panel application: Datasheet, inventory and accessory! www.panelook.com

**AUO**

	Item	Specification			Packing Remark
		Qty.	Dimension	Weight (kg)	
1	Packing BOX	4pcs/box	832(L)mm*283(W)mm*545(H)mm	30.5	
2	Pallet	1	1150(L)mm*840(W)mm*138(H)mm	13	
3	Boxes per Pallet	8 boxes/Pallet			
4	Panels per Pallet	32pcs/pallet			
	Pallet after packing	32	1150(L)mm*840(W)mm*2460(H)mm	256	



©Copyright AU Optonics, Inc.
January, 2003 All Rights Reserved.
28/31

No Reproduction and Redistribution Allowed

T315HW02 V1 - Spec. Ver 0.1



9. PRECAUTIONS

Please pay attention to the followings when you use this TFT LCD module.

9-1 MOUNTING PRECAUTIONS

- (1) You must mount a module using holes arranged in four corners or four sides.
- (2) You should consider the mounting structure so that uneven force (ex. Twisted stress) is not applied to module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.
- (3) Please attach the surface transparent protective plate to the surface in order to protect the polarizer. Transparent protective plate should have sufficient strength in order to resist external force.
- (4) You should adopt radiation structure to satisfy the temperature specification.
- (5) Acetic acid type and chlorine type materials for the cover case are not desirable because the former generates corrosive gas of attacking the polarizer at high temperature and the latter causes circuit break by electro-chemical reaction.
- (6) Do not touch, push or rub the exposed polarizers with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment. Do not touch the surface of polarizer for bare hand or greasy cloth. (Some cosmetics are detrimental to the polarizer).
- (7) When the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaked with petroleum benzene. Normal-hexane is recommended for cleaning the adhesives used to attach front/ rear polarizers. Do not use acetone, toluene and alcohol because they cause chemical damage to the polarizer.
- (8) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.
- (9) Do not open the case because inside circuits do not have sufficient strength.

9-2 OPERATING PRECAUTIONS

- (1) The device listed in the product specification sheets was designed and manufactured for TV application
- (2) The spike noise causes the mis-operation of circuits. It should be lower than following voltage:
 $V = \pm 200\text{mV}$ (Over and under shoot voltage)
- (3) Response time depends on the temperature. (In lower temperature, it becomes longer.)
- (4) Brightness depends on the temperature. (In lower temperature, it becomes lower.) And in lower temperature, response time (required time that brightness is stable after turned on) becomes longer.
- (5) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.
- (6) When fixed patterns are displayed for a long time, remnant image is likely to occur.
- (7) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interface.



9-3 ELECTROSTATIC DISCHARGE CONTROL

Since a module is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wrist band etc. And don't touch interface pin directly.

9-4 PRECAUTIONS FOR STRONG LIGHT EXPOSURE

Strong light exposure causes degradation of polarizer and color filter.

9-5 STORAGE +

When storing modules as spares for a long time, the following precautions are necessary.

- (1) Store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the temperature between 5°C and 35°C at normal humidity.
- (2) The polarizer surface should not come in contact with any other object. It is recommended that they be stored in the container in which they were shipped.

9-6 HANDLING PRECAUTIONS FOR PROTECTION FILM

- (1) The protection film is attached to the bezel with a small masking tape. When the protection film is peeled off, static electricity is generated between the film and polarizer. This should be peeled off slowly and carefully by people who are electrically grounded and with well ion-blown equipment or in such a condition, etc.
- (2) When the module with protection film attached is stored for a long time, sometimes there remains a very small amount of glue still on the Bezel after the protection film is peeled off.
- (3) You can remove the glue easily. When the glue remains on the Bezel or its vestige is recognized, please wipe them off with absorbent cotton waste or other soft material like chamois soaked with normal-hexane.



Appendix A

1. EMI specification

Item	Min	Typ	Max	Unit
EMI Level(Note)	---	---	---	dB(μ V/m)
SSCG	+/-0.5			%

Model name: T315HW02 V1

Note:

- Criteria: CISPR22
- Signal generator: PSG400
- EMI site
- Find result should be checked by connecting with TV-set